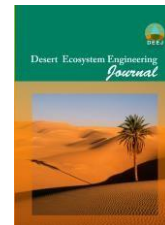




University of Kashan

## Desert Ecosystem Engineering Journal

Journal homepage: <http://deej.kashanu.ac.ir>**Analysis of sand dunes activity in Kashan Erg using Lancaster index**Asghar Tavakkoli Fard<sup>1</sup>, Hoda Ghasemieh<sup>2\*</sup>, Aliakbar Nazari Samani<sup>3</sup>, Naser Mashhadi<sup>4</sup>

Received: Aug/01/2014

Accepted: Jan/05/2015

**Abstract**

Kashan Erg is one of the most important sand dunes complexes in Iran. Due to erosive winds, always, Erg's marginal areas are faced to the transition of moving sands. So, in this research, the sand dune activity was investigated by Lancaster index. In this line, Erg's morphology map was prepared using aerial photographic, Google earth satellite image and field observations. Then, maps of isohyet, potential evapotranspiration and percentage of above velocities than threshold wind velocity in 10 meters above ground level were prepared using the analysis of anemometer data obtained from adjacent stations of Erg and their integration in Arc GIS software. Finally, the Erg activity map was drawn. According to the Lancaster index, threshold wind velocity was considered equal to 12 knots. The results showed that in most of Kashan Erg areas, sand dunes are active and only in small areas in north and south of Erg, they are very active. Also, sand dunes located in its west border are active just in their crest. Integration of morphology and sand dunes activity maps showed that because of suitable management all of the "very active" sand dunes -except for a small section of transverse dunes in its north- have been fixed. Also, in margins of the erg -which there are active sand dunes- have been stabilized.

**Keywords:** Lancaster index, Sand dunes activity, Wind erosion, Kashan Erg, Moving sand.

---

1. MSc, Faculty of natural resources and Geoscience, University of Kashan

2. Assistant professor, Faculty of natural resources and Geoscience, University of Kashan Corresponding author, Email: H.Ghasmieh@kashanu.ac.ir

3. Assistant professor, Faculty of natural resources, University of Tehran

4. Assistant professor, International Desert Research Center, University of Tehran